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THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

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UNITED STATES DEPARTMENT OF AGRICULTURE

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November 15, 1940

The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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DIVISION OF MYCOLOGY AND DISEASE SURVEY

Volume XXIV Number 21

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COTTON DISEASES IN TEXAS IN 1939

Walter N. Ezekiel and A. A. Dunlap

For several years, data on cotton crop losses from the root-rot disease (Phymatotrichum omnivorum) were obtained in surveys over various selected portions of Texas, and estimates for the State were prepared largely from these data and from consideration of weather conditions elsewhere in the State. During 1939, only limited survey data were obtained, with observations in 14 counties and estimates of losses in 678 fields. The writers have supplemented this information with reports on the prevalence of cotton diseases during the year assembled from questionnaires sent to the county agents, in the winter of 1939, after final harvest. Separate estimates were requested as to percentages of loss caused by cotton root rot, wilt, leafspot, and bollrot (as well as certain diseases of other crops). From the 254 counties of Texas, 162 reports were obtained; some information on prevalence of cotton diseases was given in reports from 135 of the counties, including most of the counties with considerable cotton production.

Cotton Root Rot

Root rot (caused by Phymatotrichum omnivorum) as usual was the most widespread and destructive disease. In individual fields, death of most of the plants and crop reduction estimated as high as 85 percent were observed. In the reports from county agents, 28 estimated crop reduction in their counties as 10 to 15 percent or more. Without giving figures for the individual counties, as derived from these reports and the other information available, the approximate losses in counties for which estimates were prepared are shown in Figure 1. The lettered sections into which the State is divided here correspond to those in which root-rot losses have been reported previously (2, 3) and to the sections for which estimated losses are given in Table 1. For the State, reduction in yield was estimated at 6.0 percent. This is probably below the average loss.

The general prevalence of root rot in 1939 followed the pattern previously described (2, p. 322). Heaviest losses were found in areas of favorably alkaline, calcareous soils, in which also rainfall during the growing season encouraged continued spread. Lower losses occurred in areas such as the central part of section D (Bell, Williamson, and Travis counties) in which lack of rainfall lowered yields of cotton as well as prevalence of root rot. Farther north in this section (as in Rockwall, Ellis, Kaufman, and Navarro counties) much greater loss from root rot did not prevent harvest of a much better crop, considered on the basis of the entire counties rather than of the individual fields with high loss from root rot. As pointed out before (3, p. 843) this correlation of rainfall conditions favoring growth of the plant with those favoring root rot tends to obscure the actually serious crop loss.

TEXAS AGRICULTURAL EXPERIMENT STATION
AGRICULTURAL AND MECHANICAL COLLEGE
OF TEXAS

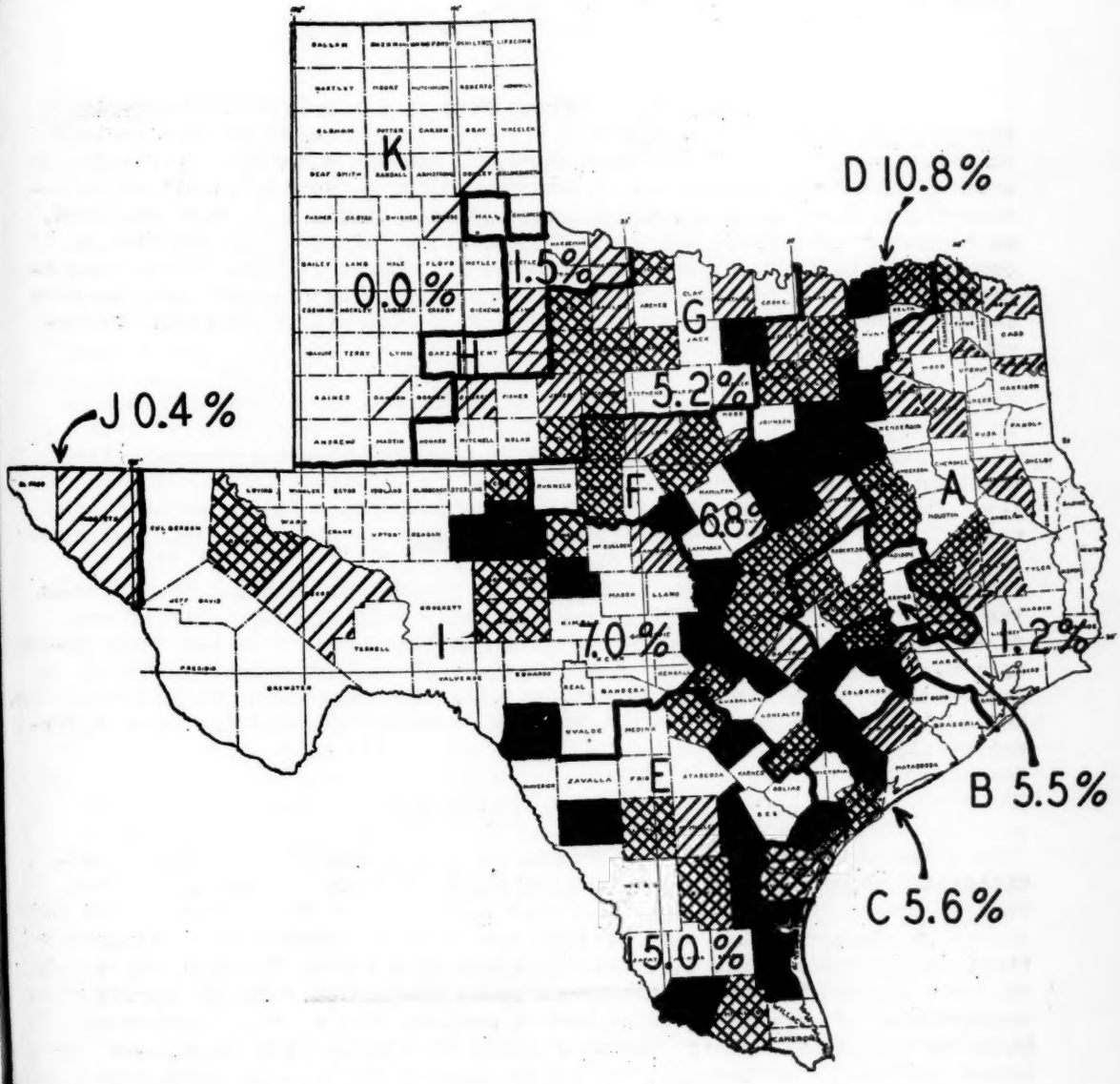

Figure 1. Phymatotrichum root rot on 1939 cotton crop. Estimates for individual counties shown by shading: loss up to 3 percent, by diagonals; 3-10 percent, cross-hatched; 10 percent and above, solid. Figures give estimated reduction in yield for large sections of the State as outlined. Single diagonals across 4 counties in section K indicate reports from county agents in area previously considered free.

Root rot was reported in four counties in section K, previously considered free of the disease. Further information is being sought on the presence of root rot in these counties.

Wilt

Locations of counties reporting loss from wilt (caused by Fusarium vasinfectum) are shown in Figure 2. Heavy loss occurred as usual chiefly in East Texas, in areas of non-calcareous, usually slightly acid, soil (in which Phymatotrichum root rot is correspondingly uncommon). Of the 15 counties in East Texas for which losses were estimated, 12 were reported as 5 percent or higher, and 5 as 20 percent or higher. The estimate of 10 percent for East Texas, which amounts to 1.6 percent for the State, may be somewhat high for loss from this disease, about which we have less quantitative information as a basis for estimation than with Phymatotrichum root rot.

Verticillium Wilt

Distribution of Verticillium wilt (Verticillium albo-atrum) also is shown in Figure 2. Severe losses occurred in 1939 only in the El Paso Valley. Occasional cases of "wilt" from twenty counties in the central portion of the State, were probably also caused by Verticillium although specimens were obtained and identified from only a few points. It is to be noted that this wilt occurs in general in calcareous soils, also favorable for Phymatotrichum root rot, as was pointed out (4) when the disease was first found in Ellis county in 1927. At no time since then has Verticillium wilt been found causing more than isolated, minor loss except in the El Paso region. Loss for 1939 is estimated at 15 percent for the El Paso Valley, and negligible for other areas. This makes a loss of only 0.3 percent for the State.

Leafspot and Bollrot

Prevalence of angular leafspot, blackarm, and bollrot (caused by Bacterium [Phytomonas] malvacearum) as shown in Figure 3, was influenced chiefly by weather conditions, and thus formed a pattern differing from the preceding diseases which are affected more largely by the soil characteristics. As in other seasons, greatest damage occurred in two distinct areas, one near the Gulf Coast and the other up in the Plains. In the second area, epiphytotics of angular leafspot are typically late, as reported for example by one county agent: "Angular leafspot appeared late in the cotton season and did great damage. The plants shed their leaves. More than I ever saw before." The loss caused by this disease is estimated as 2.7 percent for the State. Widespread occurrence of this disease, as compared to the relatively local distribution of either wilt disease, makes angular leafspot frequently second in importance only to Phymatotrichum root rot, in other seasons as well as 1939.

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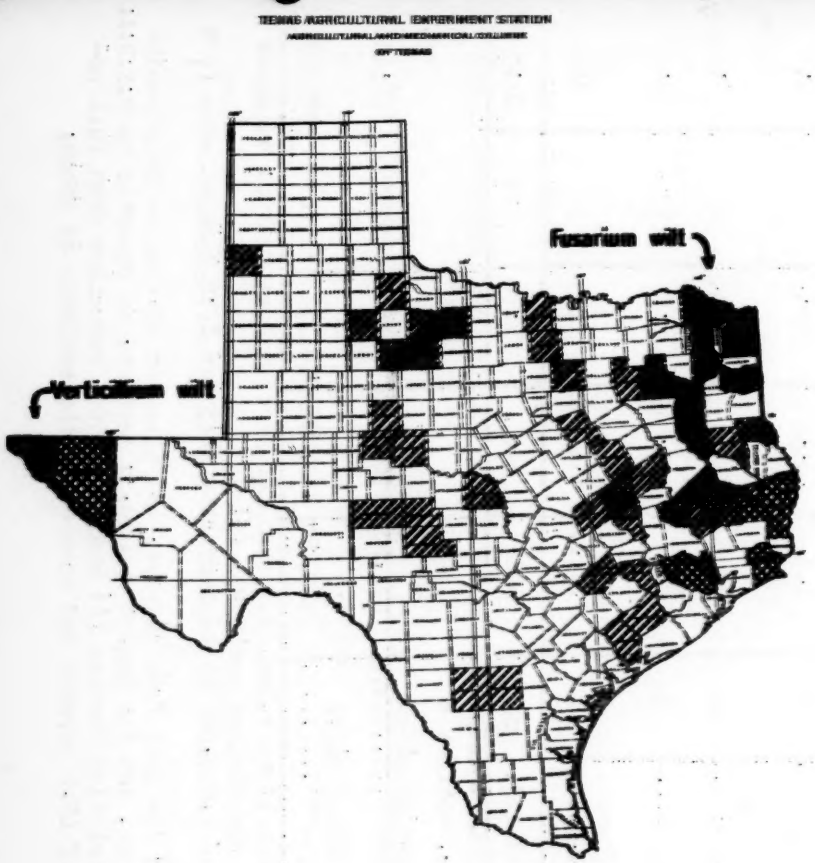

Figure 2. Fusarium and Verticillium wilt on 1939 cotton crop. Loss up to 3 percent shown by diagonal shading; 3-10 percent by cross-hatching; and 10 percent and above, solid black. Fusarium wilt is widespread in East Texas; Verticillium wilt destructive in El Paso area. Losses in the central portion of the State are probably from Verticillium, which has been found in some of the 20 counties here reporting "wilt".

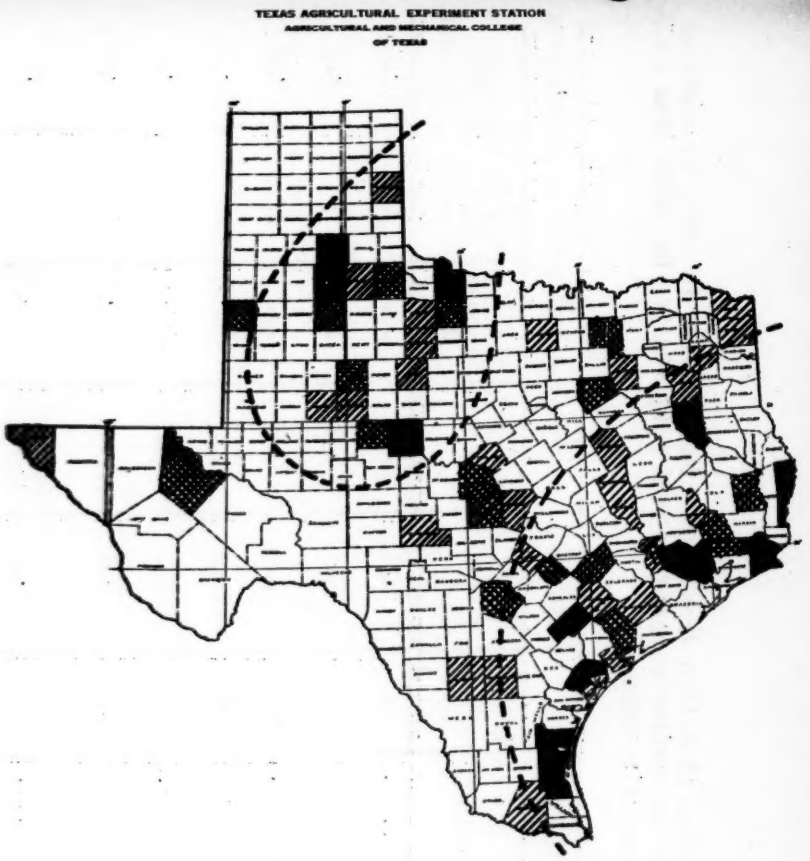

Figure 3. Leafspot and bollrot, mostly bacterial. Estimated loss up to 3 percent shown by diagonal shading; 3-10 percent by cross-hatching; and 10 percent and above, solid black. More severe losses reported from two fairly distinct areas, one along the Gulf Coast, and the other up in the Plains.

Table 1. Estimates of cotton crop losses from disease in 1939, by sections of Texas as used in earlier reports on root rot, considering data from several sources as discussed in text.

Section of the State			Estimated percentage reduction in yield, from				
Designation in map (Fig.1)	Name of section	Number of counties	Phymatotrichum root rot	Fusarium wilt	Verticillium wilt	Leafspot and bollrot	All diseases
A.....	East Texas.....	44	1.2	10.0	...	6	17.2
B.....	Eastern marginal	8	5.5	0.3	...	1	6.8
C.....	Central coast....	10	5.6	0.2	...	4	9.8
D.....	Blackland Prairies	33	10.8	....	(tr.)	1	11.8
E.....	Rio Grande Plain..	28	15.0	....	(tr.)	2	17.0
F.....	Central.....	14	6.8	....	(tr.)	3	9.8
G.....	North Texas plains and prairies....	23	5.2	....	(tr.)	2	7.2
H.....	Northern marginal	9	1.5	....	(tr.)	6	7.5
I.....	Edwards Plateau and Trans-Pecos..	40	7.0	....	(tr.)	2	9.0
J.....	El Paso Valley....	2	0.4	....	15.0	(tr.)	15.4
K.....	Northwest Texas plains.....	43	....	....	(tr.)	3	3.0
	Entire State*..	254	6.0	1.6	0.3	2.7	10.6
Crop loss in bales, estimated							
on basis of potential yield of 3,183,445 bales**.....			191,007	50,935	9,550	85,953	337,445
on basis of potential yield of 5,431,000 bales***.....			325,860	86,896	16,293	146,637	575,686

*Mean values for the State calculated from the sectional estimates, weighted by production in the various sections. (5)

**Recorded yield of 2,846,000 bales corrected only for 10.6 percent loss from disease.

***Yield corrected for loss from disease, and also for adverse weather conditions, 28 percent, and for insect damage, 9 percent, as reported by U.S.D.A. Agricultural Marketing Service (6) making a total reduction from full potential yield of 47.6 percent and increasing the estimate as shown.

Cotton Crop Losses

Estimates of the losses from the various diseases have been summarized in Table 1, with a total for all diseases of 10.6 percent 1/. The lower lines of this table give alternative calculations of the crop loss that can be ascribed to this percentage reduction. The first figures are calculated on the usual basis, of a basic yield corrected only for loss from disease, and give a total for all diseases of 337,000 bales. The second series is based instead on an estimated yield corrected for the portion of the crop estimated as lost from insects and unfavorable weather, as well as disease, and gives a larger total of 575,000 bales.

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3. ---------- and J. J. Taubenhaus. Cotton crop losses from Phymatotrichum root rot. Journ. Agr. Res. 49: 843-858. 1934.

4. Taubenhaus, J.J., W.N.Ezekiel, and H.E.Rea. A new cotton wilt. Phytopath. 19: 171-173. 1929

5. U.S. Department of Agriculture, Agricultural Marketing Service. Texas Cotton. Estimated acreage, yield, and production, 1938 and 1939, by counties. (mimeographed). Austin, Texas, March, 1940.

6. ----------. Revised estimate of the cotton crop for 1939 (mimeographed). Austin, Texas, May 27, 1940.

(Texas Agricultural Experiment Station, A. & M. College of Texas, College Station)

1/ The estimated percentage reduction of 10.6 percent for all diseases given here supersedes a slightly higher figure of 11.1 percent mentioned in an earlier paper (1). Both figures were derived from the same data, but summation of estimates for the State were based at first on weighting by yield data for previous seasons, while the yields for the same season were available for the weighting which yielded the State estimates given in the present paper.

POTATO RING ROT IN WASHINGTON

Glenn A. Huber

The potato industry in western Washington has grown rapidly during the past few years. In 1940 there were approximately 1,850 and 4,000 acres of Netted Gem and White Rose grown in Skagit and Whatcom counties, respectively. Of the 4000 acres grown in Whatcom County approximately 1700 acres were for certified seed.

Recently the potato industry in the Puget Sound area, including both commercial and certified seed stock, has been threatened by an outbreak of the bacterial ring rot disease, caused by Bacterium sepedonicum [Phytomonas sepedonica] which was first definitely identified in 1938 in potato tubers sent to the Western Washington Experiment Station from Ellensburg. In 1939 the disease was found in one lot of seed potatoes (Irish Cobbler) grown in King County. The seed stock for this planting had been obtained from the Ellensburg district. In 1940, ring rot was found in Clark, Snohomish, Skagit, and Whatcom Counties.

The State Department of Agriculture is making an effort to locate fields and tuber lots in which the disease occurs, and to prevent affected lots from being used as seed. The growers in whose stock the disease has been found are making an effort to stamp it out by disposing of their entire stock, disinfecting their implements, storage houses, crates, etc., and obtaining new seed stock known to be free from the disease.

The Department of Plant Pathology at the Western Washington Experiment Station is cooperating with growers and the State Department of Agriculture in their campaign against the bacterial ring rot disease. Numerous surveys, including inspections of 14 potato plantings in Whatcom County, 4 in Skagit County, and 11 in Snohomish County, were made during the latter part of July and August, and the fore part of September. A number of those fields were visited 2 and 3 times. Thirty-eight lots totaling 469 tubers were examined for the presence of the ring rot bacteria and for other wilt-producing organisms by staining and cultural methods.

Bacterial ring rot, Bacterium sepedonicum [P. sepedonica], was found in 11 lots; Verticillium wilt, Verticillium albo-atrum, in 13 lots; black leg, Bacillus atrosepticus [Erwinia phytophthora], in 5 lots; and Fusarium wilt, Fusarium sp., in 4 lots. The remaining lots showed no evidence of fungous or bacterial invasion.

(Western Washington Experiment Station).

NUT DISEASES IN THE PACIFIC NORTHWEST IN 1940

Paul W. Miller

Persian Walnut Diseases

Walnut bacteriosis (caused by Phytomonas juglandis (Pierce) Bergey et al.).--The season of 1940 was one of moderately heavy blight infection in the Pacific Northwest, the percentage of infected nuts varying, according to the orchard and locality, from 5 to 50 percent. In Oregon, the most severe losses occurred in the Silverton district where it is estimated that 40 percent of the crop, on the average, in unsprayed orchards was lost because of this disease. For the State as a whole about 20 percent of the potential 1940 walnut crop was either completely destroyed or the quality impaired by blight.

Mushroom root rot (caused by Armillaria mellea (Vahl.) Quel.)--This disease caused the death of some grafted Persian walnuts of the Franquette variety in Oregon, mostly in the vicinity of Newberg. However, only a relatively small percentage, estimated at not more than 1 percent, of the trees lost in 1940 died from this disease.

Leaf sorch (non-parasitic).--This leaf spot was prevalent in greater or less amounts in practically all walnut-growing districts in the Pacific Northwest. On the whole, however, it was not so prevalent nor so severe as in 1939.

"Black-line" (non-parasitic).--This disorder, characterized by the girdling of the bark at the graft union, caused the death of a relatively large number of 14- to 25-year-old grafted walnut trees in Oregon during 1940. The affected trees were Persian walnuts of the Vrooman Franquette variety on California black walnut rootstocks.

Dieback (non-parasitic).--This disorder, characterized by a dying-back of the terminal twigs and branches, was prevalent in a number of orchards in western Oregon in 1940. In general, it was most severe in orchards located on the "heavier" soil types.

Filbert Diseases

Bacterial blight (caused by Phytomonas corylina Miller et al.)--This disease, while widespread in the Pacific Northwest was not so severe, on the whole, as in the past two seasons. Tree losses in young orchards, 2 to 4 years of age, ranged from less than 1 up to 15 percent, the estimated average loss being about 2 percent. In orchards 5 years old or older, no trees were known to have been killed by this disease but it did destroy

many potential pistillate-flower buds, nut-bearing twigs, and branches which indirectly reduced the crop. In certain severely infected orchards in western Oregon it is estimated that bacterial blight was responsible for a loss of from 10 to 25 percent of the potential crop. However, for the Pacific Northwest as a whole, the crop loss from this disease is estimated at less than 5 percent.

Mildew (caused by Phyllactinia corylea (Pers.) Karst.).--Filbert mildew was widespread in the Pacific Northwest during the late summer of 1940. However, the disease was apparently of only minor economic importance as the infected leaves retained their normal green color and persisted on the trees up to the time of normal leaf fall. It is believed that the lateness of the attack may be responsible for the small amount of injury which seemingly occurred.

Leaf scald (non-parasitic).-- This disorder was widely distributed in the Pacific Northwest in 1940. It was particularly severe on the Brixnut and DuChilly varieties where it caused a significant decrease in functional leaf area and premature defoliation.

Brown-stain (non-parasitic).--This disorder, characterized by the exudation of a brownish liquid from the shell and abortion of the embryo, was prevalent in greater than usual amounts in a number of orchards in the Pacific Northwest in 1940. Crop losses from this disorder ranged from less than 1 up to 25 percent, the estimated average loss being about 5 percent.

(Division of Fruit and Vegetable Crops and Diseases.)

BRIEF NOTES ON PLANT DISEASES

DAHLIA SMUT, ENTYLOMA DAHLIAE, FOUND ON THE OREGON COAST: All the dahlia plants in a large planting in a city park in Astoria, Oregon, are infected with Entyloma dahliae. Not only is every plant infected but nearly every leaf on each plant shows typical spots. The planting includes pompoms, cactus, and formal decorative types. The foliage of all the varieties appears dark because of the round black spots which are so abundant that they coalesce over the leaf surfaces. This new occurrence of Entyloma is particularly interesting because this identical park is the place where calendula smut, Entyloma calendulae, was found in 1935. Some 20 other plantings of dahlias within and near Astoria seem free from smut infection. While studying the inter-relations of dahlia viruses and truck crops, we have examined many dahlia plantings throughout the State and have seen no indications of smut or other leaf-spotting fungi except at this one isolated park planting, high above the city of Astoria. This localization is suggestive of some relationship between the calendula and dahlia smuts, a circumstance which has been commented on by European investigators. The locations in the park, where E. calendulae was found in 1935 and E. dahliae in 1940, are about 250 yards

apart. In 1938, E. calendulae was found on calendulas planted about a filling station just west of Astoria city limits. The occurrences of Entyloma on Compositae observed by us are:

February, 1935, on calendulas in a greenhouse, Portland, Oregon.
September, 1935, on calendulas in Reservoir Park, Astoria, Oregon.
August, 1938, on calendulas near Astoria, Oregon.
October, 1940, on dahlias in Reservoir Park, Astoria, Oregon.

(Frank P. McWhorter, Oregon Agricultural Experiment Station.)

POWDERY AND DOWNY MILDEWS ON CUCURBITS IN NEW YORK: In 1939, powdery mildew was very general in New York State on cucumbers, squash, pumpkin, and muskmelon. Many of the plantings died early after a white coating of the powdery mildew occurred on all the foliage. The loss on melons alone was estimated as 2 to 5 percent. Since the perfect stage of cucurbit mildew has rarely been found, it is not definitely known what genus is most commonly present. Hoping that at least a few perithecia might be discovered, collections were made from various parts of the state of old dying leaves covered with powdery mildew. These leaves were stored until recently before time was available for examining them microscopically. No perfect stage was discovered. It was surprising, however, to find on each dying leaf, aside from the thick coating of powdery mildew on the upper surface, also abundant fruiting of the downy mildew fungus, Pseudoperonospora cubensis, on the lower surface. At the time of collecting the dead or dying leaves, there were no signs or symptoms which showed the presence of the downy mildew, and even now the lower leaf surfaces are uniformly brown without indicating to the unaided eye the presence of any fungous growth. The downy mildew has been reported only a few times upstate. The questions now are whether Pseudoperonospora has been present at all other times when powdery mildew was supposed to kill the plants quickly, and how much injury in 1939 was due to Erysiphe and how much to Pseudoperonospora. (Charles Chupp, New York State College of Agriculture. November 12.)

CHARCOAL ROT CAUSING DAMAGE TO SORGHUM IN NEBRASKA: Last week I observed charcoal rot [Sclerotium bataticola] in 71 percent of the grain sorghum fields in southeastern Nebraska. In some fields 60 percent of the stalks were broken off with the heads lying on the ground. This condition is probably general over the entire State. (J.E. Livingston, University of Nebraska, College of Agriculture, November 1.)

CHECK LIST REVISION

Freeman Weiss

CARYA

CARYA spp., HICKORY. (Syn. Hicoria. Under International Rules Carya has precedence). Plurivorous and cosmopolitan organisms, and host sp. unidentified.

Aleurodiscus candidus (Schw.) Burt, bark patch. Mo., Ohio, Pa.
A. oakesii (Berk. & Curt.) Cke. Mo., Pa.
Armillaria mellea Vahl ex Fr., root rot. Cosmopolitan.
Botryosphaeria ribis Gross. & Dug., on branches. Fla.
Caryospora minor Pk., and C. putaminum (Schw.) DeNot.,, on nuts. Cosmopolitan.
Ceratophorum uncinatum (Clint.) Sacc., on leaves. Ark., Kans., Mo.
Cercospora halstedii Ell. & Ev., leaf blotch. Eastern and Southern States. Conidial stage of Mycosphaerella dendroides.
Cladosporium effusum (Wint.) Demaree, scab, leaf-spot. General.
Coniosporium nucifoedum Fairm., on nuts. N.Y.
(Cylindrosporium caryigenum Ell. & Ev.): Mycosphaerella caryigena.
Cytospora caryigena Ell. & Ev., on branches. Va., W. Va.
Daedalea ambigua Berk. and D. repanda Pers., wood rot. Lower Mississippi Valley.
D. quercina L. ex Fr. and D. unicolor Bull. ex Fr., wood rot. Eastern States.
Diaporthe apocrypta (Cke. & Ell.) Sacc., on branches. N.J., Ohio
Didymella nucis-hicoriae Fairm., on nuts. N.Y.
Discosia artocreas Tode ex Fr., on nuts. Cosmopolitan.
(D. rugulosa Berk. & Cke.): Gnomonia caryae.
Dothiorella nucis Fairm., on nuts, N.Y.
Favolus alveolaris (DC. ex Fr.) Quél., heart rot. Va., Vt.
Fomes applanatus (Pers. ex Fr.) Gill., heart rot. Cosmopolitan.
F. connatus (Weinm. ex Fr.) Gill., white spongy heart rot. New England.
F. densus Lloyd, wood rot. La., Miss.
F. igniarius (L. ex Fr.) Kickx., white spongy heart rot. Cosmopolitan.
F. marmoratus (Berk. & Curt.) Cke., wood rot. Lower Mississippi Valley.
F. pinicola (Sw. ex Fr.) Cke., brown crumbly heart rot. Wis.
Fusarium roseum Lk., on nuts. N.Y.
(Fusicladium effusum Wint.): Cladosporium effusum.
Ganoderma curtisii (Berk.) Murr., wood rot. Lower Mississippi Valley.
Gibberella saubinettii (Mont.) Sacc., on nuts. N.Y.
(Gloeosporium caryae Ell. & Dearn.): Gnomonia caryae.
(G. caryae var. curvisporum Dearn.): Gnomonia caryae var. pecanae.
Glomerella cingulata (Ston.) Spauld. & Schrenk, on nuts. Southern States.
Gnomonia caryae Wolf, leaf spot. Widespread.
G. clavulata Ell., on fallen leaves. N.J.
G. dispora Demaree & Cole, on leaves. Fla., Ga.
G. setacea Pers. ex Ces. & DeNot., also var. macrospora Ell. & Ev., and var. caryae Dearn. & House, on leaves. Eastern and Southern States.

Harpographium fasciculatum Sacc., on branches. La.
Hendersonia pustulata Ell. & Ev., on nuts. N.J., N.Y.
Hydnum septentrionale Fr. (and other Hydnum spp.) white spongy rot. Occasionally on living trees.
Karschia elaeospora Fairm., on nuts. N.Y.
Leptosphaeria cacuminispora Fairm., on nuts. N.Y.
(Leptothyrium caryae (Ell. & Ev.) Cole): Gnomonia caryae.
Marasmius nucicola McDougall, on nuts. Ill.
Marssonina juglandis (Lib.) Magn., leaf spot. N.J. and N.C. to Iowa. Conidial stage of Gnomonia leptostyla Ces. & DeNot,
Massariovalsa sudans (Berk. & Curt.) Sacc., on branches. Ga., N.J.
Melanconiella pallida Rehm, on branches. N.Y. to Ohio. (Perfect stage of Melanconium pallida).
(Melanconiopsis inquinans Ell. & Ev.): Massariovalsa sudans.
Melanconis macrosperma Tul., on branches. Mich., Nebr., N.J. (Perfect stage of Melanconium magnum).
Melanconium spp. (including M. angustum Ell. & Ev., M. bicolor Nees, M. gracile Ell. & Ev., M. magnum (Grev.) Berk., and M. pallidum Pk.), on branches, probably sapr. in part. Widespread.
Melanomma caryophagum (Schw.) Sacc., on nuts. Widespread.
Microsphaera alni DC. ex Wint., powdery mildew. Cosmopolitan
Microstroma juglandis (Bereng.) Sacc., leaf spot, witches' broom. Widespread.
Monochaetia desmazierii Sacc., leaf spot. Md. to N. Car. and Tenn.
Mycosphaerella dendroides (Cke.) Demaree & Cole, leaf blotch. Eastern and Southern States.
Myxosporium luteum Ell. & Ev., on bark. W. Va.
Nectria cinnabarina Tode ex Fr., on twigs and bark. Cosmopolitan.
N. galligena Bres., trunk canker. Eastern States.
N. ochroleuca Berk., on bark. Widespread
Pestalotia nucicola Ell. & Ev., on nuts. N.J., N.Y.
Pezizella lythri (Desm.) Shear & Dodge, on twigs. Va.
Phoma exocarpina Pk., on nuts. Mich., N.Y.
Phomopsis sp., twig, branch & trunk galls. Eastern States.
Phoradendron flavescens (Pursh) Nutt., mistletoe. Ind., Texas.
Phyllactinia corylea Pers. ex Karst., powdery mildew. Wis.
Phyllosticta spp. (P. caryae Pk., P. convexula Bub., and P. subtilis Pk.), leaf spots. Widespread.
Physalospora fusca Stevens, P. obtusa (Schw.) Cke., and P. rhodina (Berk. & Curt.) Cke., on branches. Southern States.
Phytomonas tunefaciens (EFS.) Bergey, crown gall. Md., Kans.
Pleonectria missouriensis (Ell. & Ev.) Sacc., on bark. Del. to Mo.
Pleurotus corticatus Fr., sapwood rot. Ark.

Polyporus spp. Besides certain cosmopolitan wood-rotting spp. including P. adustus Willd. ex Fr., P. hirsutus Wulf. ex Fr., P. pargamenus Fr. and P. versicolor L. ex Fr., the following spp. have been reported from the Lower Mississippi Valley: P. biformis Kl., P. dichrous Fr., P. distortus (Schw.) Fr., P. hydnoides (Sw) Fr., P. sector Ehr. ex Fr., P. supinus Sw. ex Fr., P. zonalis Berk.

CARYA--Continued

Pyrenochaeta nucinata Fairm., on nuts. N.Y.
Ramularia albomaculata Pk., on leaves. Mich., N.Y.
Schizophyllum commune Fr., wound rot. Cosmopolitan.
Septobasidium spp., expecially S. castaneum Burt, S. curtisii (Berk. & Desm.) Boed. & Stein, and S. lilacinoalbum Couch, felt fungus canker. Southeastern States.
Septoria caryae Ell. & Ev., leaf spot. Del.
S. hicoriae Tharp, leaf spot. Texas.
Solenia ochracea Hoffm. ex Fr., bark patch. Mass.
Sphaeropsis linearis Pk. (S. caryae Ell. & Ev.), on branches. Mo., N.Y., W. Va.
S. pallidula Fairm. and S. pericarpi (Schw.) Ell. & Ev., on nuts. Widespread.
Stagonospora linearis Pk., on branches. Ill.
Stereum hirsutum Willd. ex Fr., and S. purpureum Pers., wood rot. Ind., N.Y.
Strumella coryneoidea Sacc. & Wint., trunk canker. Pa.
Trametes rigida Berk. & Mont., wood rot. Lower Mississippi Valley.
Trichothecium roseum Link, on nuts. Cosmopolitan.
Volutella caryogena Fairm., on nuts. N.Y.
Rosette, physiogenic--zinc deficiency. Southeastern States.

CARYA ALBA (L.) Koch, MOCKERNUT HICKORY. Growth Regions 20, 22, 24, 25, 27, 28, 29, 30.

Anthostoma juglandinum Rehm var. caryae Rehm, on twigs. Ill.
Articularia quercina (Pk.) Höhn., on leaves. Mo.
Cladosporium effusum (Wint.) Demaree, scab. Ill., Kans.
Clitocybe parasitica Wilcox, root rot. Okla.
Coniothyrium ? caryogenum Rand, on leaves. Ill.
Dothiorella hicoriae Dearn. & House, on twigs. N.Y.
Gnomonia caryae Wolf, anthracnose. Conn. to Ill.
Hendersonia davisii Ell. & Ev., leaf spot. Wis.
Melanconis hicoriae Wehm., on branches. Ala.
Microsphaera alni DC. ex Wint., powdery mildew. Widespread.
Microstroma juglandis (Bereng.) Sacc., leaf spot, witches' broom. General.
Monochaetia desmazierii Sacc., leaf spot. Tenn.
Mycosphaerella dendroides (Cke.) Demaree & Cole, leaf blotch. Southern States.
Mycosphaerella maculiformis (Pers. ex Fr.) Schroet., on fallen leaves. N. Y.
Phyllosticta caryae Pk., leaf spot. Fla., N.Y., Wis.
P. convexula Bub., leaf spot. Mo.

CARYA AQUATICA (Michx. f.) Nutt., WATER HICKORY. Growth Regions, 20, 25, 28, 29, 30.

Cladosporium effusum (Wint.) Demaree, scab. Fla.
Mycosphaerella dendroides (Cke.) Demaree & Cole, leaf blotch. La.

CARYA--Continued

Microstroma juglandis (Bereng.) Sacc., leaf spot, witches' broom. La.
Pestalotia sphaerelloides Ell. & Langl., leaf spot. La.
Phyllosticta caryae Pk., leaf spot. La.
Septobasidium cokeri Couch, felt fungus canker. N.C.
Bunch disease, undet. virus. La., Okla., Texas

CARYA CORDIFORMIS (Wang.) Koch, BITTERNUT HICKORY. Growth Regions 20, 22, 23, 24, 25, 26, 27, 28, 29, 30.

Ceratophorum uncinatum (Clint.) Sacc., on leaves. Kans., Mo.
Cladosporium effusum (Wint.) Demaree, scab. Kans., Wis.
Fusarium carpineum Davis, leaf spot. Wis.
Gnomonia caryae Wolf, anthracnose. Wis.
Melanconium pallidum Pk., on branches, Ohio, W. Va.
Microstroma juglandis (Bereng.) Sacc., leaf spot, witches' broom. Wis.
Mycosphaerella caryigena Demaree & Cole, leaf spot. Wis.
Phyllactinia corylea Pers. ex Karst., powdery mildew. Mich.
Septoria hicoriae Tharp, leaf spot. Texas.

CARYA GLABRA (Mill.) Sweet, PIGNUT HICKORY. Growth Regions 20, 22, 24, 25, 27, 28, 29, 30.

Diaporthe hicoriae Wehm., on branches. Mich.
Gnomonia caryae Wolf, anthracnose. N.Y., Okla.
G. setacea Pers. ex Ces. & DeNot. var. caryae Dearn. & House, on leaves. N.Y.
Massariovalsa sudans (Berk. & Curt.) Sacc. (Melanconiopsis inquinans Ell. & Ev.), on twigs. Ga., N.J.
Microstroma juglandis (Bereng.) Sacc., leaf spot, witches' broom. Widespread.
Monochaetia desmazierii Sacc., leaf spot. Md.
Phyllosticta convexula Bub., leaf spot. Va.
Rosellinia aquila (Fr.) DeNot., on bark. N.Y.

CARYA OVATA (Mill.) Koch, SHAGBARK HICKORY. Growth Regions, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30.

Endothia parasitica (Murr.) P. & H. And., on branches (sapr.).
Gnomonia caryae Wolf, anthracnose. General.
Microstroma juglandis (Bereng.) Sacc., leaf spot, witches' broom. Widespread.
Monochaetia desmazierii Sacc., leaf spot. Tenn.
Phyllosticta caryae Pk., leaf spot. Widespread.
Rosellinia caryae Bonar (Dothichiza caryae Bonar), twig canker. Mich.
Septoria caryae Ell. & Ev., leaf spot. Mich.

CARYA PECAN (Marsh.) Engl. & Graebn., PECAN. Growth Regions 16, 20, 22, 25, 29; also cult, in 30 and in Southwestern and Pacific Coast States.

Articularia quercina (Pk.) Höhn. var. minor Charles, on leaves. Texas.
Aspergillus chevalieri Mangin, storage mold (nuts). Southern States.
Botryosphaeria berengeriana DeNot., dieback. S.C. to La., Ariz.
B. ribis Gross. & Dug., on branches. Occasional in Southern States.
Cephaleuros virescens Kze., algal leaf spot. Fla.
Cephalothecium roseum Cda., on nuts following scab. Southern States.
Cercospora fusca Rand, brown leaf spot. Southeastern and Gulf States to N.Mex.
(C. halstedii Ell. & Ev.): Mycosphaerella dendroides.
(Cercosporella caryigena (Ell. & Ev.) Höhn.): Mycosphaerella caryigena.
Cladosporium effusum (Wint.) Demaree, scab. General.
Coniothyrium caryogenum Rand, on nuts. Southern States. (Formerly believed to cause kernel spot, q.v.)
Corticium koleroga (Cke.) Höhn., thread blight. Fla., N.C.
(Cylindrosporium caryigenum Ell. & Ev.): Mycosphaerella caryigena.
Elsinoë randii Jenkins & Bit., nursery blight. Southeastern and Gulf States.
Glomerella cingulata (Ston.) Spauld. & Schrenk, on nuts. Occasional.
Gnomonia caryae Wolf var. pecanae Cole (Leptothyrium caryae var. pecanae Cole), liver spot. Ark., La., Miss., Texas.
G. dispora Demaree & Cole, on leaves. Fla., Ga.
G. nerviseda Cole (Leptothyrium nervisedum Cole), vein spot. Ariz?, Ark., La., Miss., Texas.
Helicobasidium purpureum (Tul.) Pat. (Rhizoctonia crocorum (Pers.) DC.), root rot. Texas.
Heterodera marioni (Cornu) Goodey, root knot.
Mycosphaerella caryigena Demaree & Cole (Cercosporella caryigena (Ell. & Ev.) Höhn., Cylindrosporium caryigenum Ell. & Ev.), downy spot. Ga. and Fla. to Texas and Ark.
M. dendroides (Cke.) Demaree & Cole (Cercospora halstedii Ell. & Ev.), leaf blotch. Southern States, also Ind.
Microcera coccophila Desm., stem canker. La., Texas.
Microsphaera alni DC. ex Wint., powdery mildew. Occasional.
Microstroma juglandis (Bereng.) Sacc., leaf spot. Ga. to Texas; var. juglandis Higgins, catkin blight. Ga.
Myriangium duriaei Mont. & Berk., on scale insects. Ga.
M. tuberculans Miles, black spot (bark), Ga., Miss.
Naematospora coryli Pegl., on nuts. Southern States.
Pestalotia uvicola Speg., leaf spot. Fla., Texas.
Phoradendron flavescens (Pursh) Nutt., mistletoe. Widespread.
(Phyllosticta caryae Pk., on pecan): Elsinoë randii.
Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz., Texas.
Physalospora fusca N.E. Stevens and P. obtusa (Schw.) Cke., on branches. Fla.
Phytomonas tumefaciens (EFS) Bergey, crown gall. Widespread.
Schizophyllum commune Fr., heart rot (following drought injury), Okla.
Septoria caryae Ell. & Ev., leaf blight. Texas.

CARYA--Continued

Black pit and kernel spot, caused by feeding punctures of plant bugs (Nezara viridula and Leptoglossus phyllopus). Southeastern and Gulf States.
Bunch disease, undet. virus. La., Miss., Okla., Texas.
Leaf scorch, physiogenic--low fertility and moisture-holding capacity of soil.
Leaf and stem galls. Phylloxera devastatrix Perg. Ark., La., Miss.
Little leaf, unknown. Occasional, N.C. to Miss.
Rosette, zinc deficiency. Southeastern and Gulf States to Calif.
Sand burn (seedlings), high temperature. Occasional in Southern States.

(Division of Mycology and Disease Survey.)

OCTOBER WEATHER

October had abnormally low temperatures in the Northeastern States, near-normal warmth in the Atlantic area and Gulf sections, and also in much of California. Elsewhere the month was decidedly warmer than normal, being outstandingly so in the interior valleys and Northwest. Figure 1 shows that the monthly mean temperatures were 2° to 5° below normal from extreme eastern North Carolina and much of Virginia northward and northeastward, while in the south Atlantic coast districts and most of Florida the departures were 1° to 2°. In all other sections of the country the means were above normal, the largest plus departures, ranging from 4° to 9° occurring from the middle Mississippi Valley and southern Great Plains northward.

Figure 2 is conspicuous for the abnormally heavy rains shown for the States west of the Rocky Mountains. This is the second successive month with far-above-normal rainfall in nearly all of this area, although parts of California had somewhat below normal in October. Considerable portions of this western area had, in October, from one and one-half to more than twice the normal rainfall, while the totals in parts of the northern Great Plains ranged from one and one-half to more than three times the normal. There was also a narrow belt extending from the lower Lake region westward to central Nebraska and some localities in the west Gulf area where precipitation was far above normal. Elsewhere the amounts were generally deficient, markedly so from southwestern Kansas southward and in northern Rocky Mountain districts. Also, in the Southeast where September was decidedly dry, October had but little rainfall, and in the extreme Northeast less than 50 percent of normal was received.

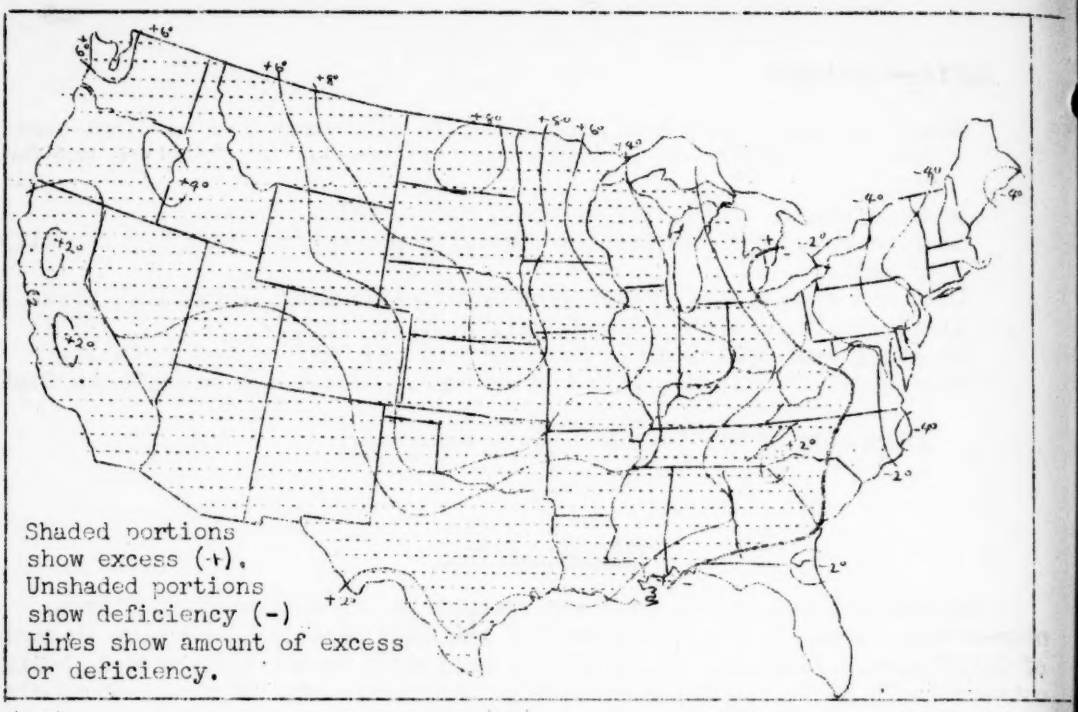

Figure 1. Departure of Mean Temperature from Normal for October 1940

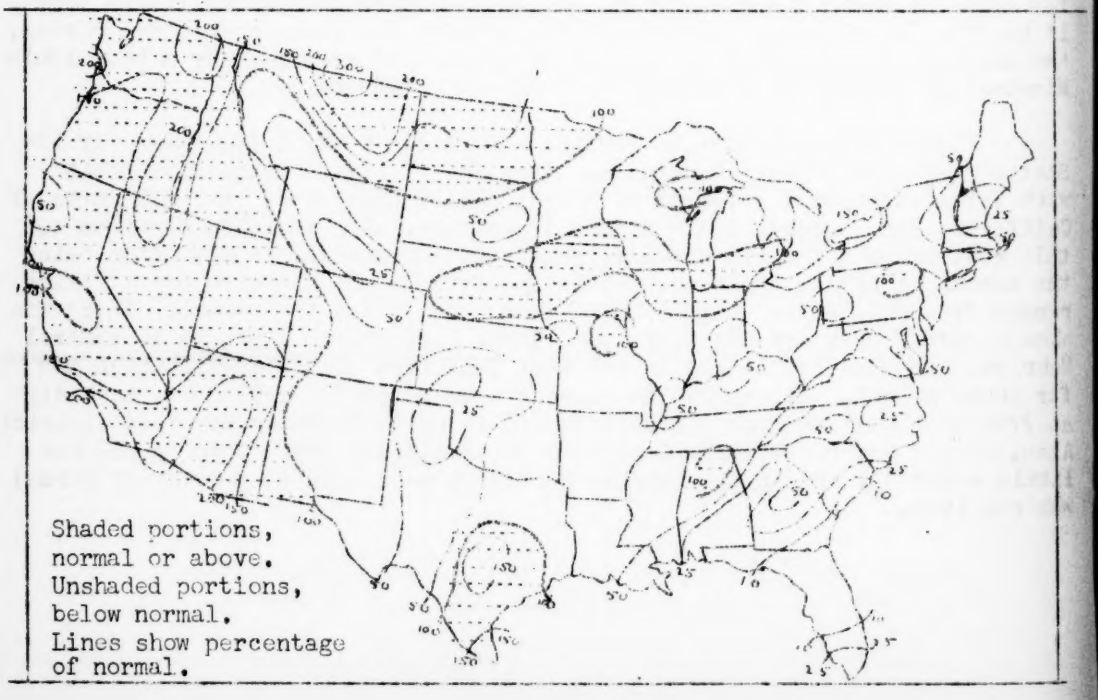

Figure 2. Percentage of Normal Precipitation for October 1940.